

AMENDMENTS TO THE CLAIMS

In the Claims:

Please amend Claims 9 and 16 and please cancel Claims 4-6, 8, and 15 without prejudice. A complete copy of the claims including marked-up versions of each claim which is amended in this Amendment B appears below.

- 1 1. (Previously Presented) A laser multiplexing apparatus for laser produced plasma
2 generation, comprising:
3 a plurality of pulsed laser sources for generating a respective plurality of pulsed
4 laser beams; and
5 a multiplexing element arranged to temporally, spatially, and/or angularly
6 interleave said plurality of pulsed laser beams to cause them to propagate into a single,
7 co-propagating output beam;
8 wherein said plurality of pulsed laser beams and said multiplexing element are arranged
9 and configured to allow the average power scaling up of said output beam to be
10 controlled independently from the peak intensity of said output beam.
- 1 2. (Previously Presented) An apparatus as defined in Claim 1, in which the
2 multiplexing element comprises a rotating mirror or prism which introduces a time-
3 varying angular deviation to the laser beams.

1 3. (Previously Presented) An apparatus as defined in Claim 1, in which the
2 multiplexing element comprises a wedge-shaped prism that is rotated such that an output
3 face of the wedge-shaped prism presents the same angle of incidence to the laser beams
4 in turn as they are sequentially pulsed.

1 4-8. (Cancelled).

1 9. (Currently Amended) A laser multiplexing apparatus for laser produced plasma
2 generation, comprising:
3 at least two pulsed laser sources for generating pulsed laser beams; ~~and~~
4 a temporal interleaving element arranged for temporally interleaving the pulsed
5 laser beams to propagate along a common output ~~path.~~ path; and
6 a laser multiplexing element comprising a compound lens having at least two
7 focusing elements arranged to focus at least two respective laser beams to a focal point
8 on a common workpiece.

1 10. (Previously Presented) An apparatus as defined in Claim 9, in which the temporal
2 interleaving element comprises a variable deviation element.

1 11. (Original) An apparatus as defined in Claim 10, in which the variable deviation
2 element comprises a moveable reflector or wedge.

1 12. (Original) An apparatus as defined in Claim 10, in which the variable deviation
2 element comprises a moveable refractor.

1 13. (Previously Presented) A laser multiplexing apparatus comprising:
2 at least two pulsed laser sources for generating pulsed laser beams; and
3 a temporal multiplexing element arranged to temporally interleave at least two
4 pulsed laser beams, in which the temporal multiplexing element comprises a variable
5 deviation element, and in which the variable deviation element comprises a moveable
6 diffractive element.

1 14. (Original) An apparatus as defined in Claim 10, in which the variable deviation
2 element has a number of reflective surfaces being an integer number of the number of
3 laser sources being multiplexed.

1 15. (Cancelled).

1 16. (Currently Amended) An apparatus as defined in Claim ~~15~~, 9, in which the
2 compound lens comprises an array of lenses.

17. (Cancelled).

1 18. (Previously Presented) A method of multiplexing laser beams for plasma
2 generation, comprising the steps of:
3 directing pulsed laser light beams from a plurality of independent lasers onto a
4 movable deviation element to temporally, spatially, and/or angularly interleaving said
5 pulsed laser beams to cause them to propagate into a single, co-propagating output beam;
6 and
7 moving said deviation element at a rate such that deviation of a laser pulses from
8 said pulsed laser beams between lead and trailing edges is minimized;
9 wherein said pulsed laser light beams and said deviation element are arranged and
10 configured to allow the average power scaling up of said output beam to be controlled
11 independently from the peak intensity of said output beam.

19-23. (Cancelled).

1 24. (Previously Presented) A laser multiplexing apparatus comprising:
2 a plurality of laser sources each of which generates a laser beam along an axis that
3 is laterally and/or angularly spaced apart from the axes of all other laser beams; and
4 a temporal multiplexing element that is configured and arranged to temporally
5 interleave the laser beams from the plurality of sources such that the plurality of laser
6 beams all propagate close together;

7 wherein the temporal multiplexing element comprises:

8 an array of respective closely spaced, small lenses forming a "fly-eye"
9 arrangement.

25. (Cancelled).

1 26. (Previously Presented) A laser multiplexing apparatus as defined in Claim 9,
2 wherein the temporal interleaving element comprises:

3 a rotating mirror or prism which introduces a time-varying angular deviation to the
4 laser beams.

1 27. (Previously Presented) A laser multiplexing apparatus as defined in Claim 9,
2 wherein the temporal interleaving element comprises:

3 a wedge-shaped prism that is rotated such that an output face of the wedge-shaped
4 prism presents the same angle of incidence to the laser beams in turn as they are
5 sequentially pulsed.

1 28. (Previously Presented) A laser multiplexing apparatus comprising:

2 a plurality of laser sources each of which generates a laser beam along an axis that
3 is laterally and/or angularly spaced apart from the axes of all other laser beams; and

4 a temporal multiplexing element that is configured and arranged to temporally
5 interleave the laser beams from the plurality of sources such that the plurality of laser
6 beams all propagate close together;
7 wherein the temporal multiplexing element comprises:
8 a plurality of beam shaping elements that have the plurality of laser beams
9 respectively focused thereupon to cause them to produce a respective plurality of coaxial
10 circular output beams; and
11 a common focusing element that produces a substantially collimated annular
12 output beam from the circular annular output beams.